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teeth. The full paper will appear in the next number of the NATURALIST. In the meantime I will be glad to receive suggestions or criticisms upon the above terms.—*Henry F. Osborn.*

MINERALOGY AND PETROGRAPHY.[1]

PETROGRAPHICAL NEWS.—The basaltic rocks of Alsace, according to Linck,[2] embrace feldspathic and non-feldspathic varieties. Of the latter a limburgite from Reichenweiler contains a glassy base, which deports itself towards reagents like nepheline, a fact which would cause the rock strictly to be classed among the nepheline basalts. Its olivine yields upon analysis:—

SiO_2	Al_2O_3	Fe_2O_3	FeO	MgO	Na_2O
41.53	2.33	0.58	10.27	43.60	1.69,

indicating a replacement of part of the magnesium of the typical molecule by aluminium and sodium. Olivine concretions occurring in this rock consist of olivine, bronzite and a bottle-green augite containing 2.64 per cent. of K_2O and 2.41 per cent. of Na_2O.—Brief notes on the rocks of Fernando Noronha, an island in the Atlantic about two hundred miles north-east of Cape St. Roque, Brazil, are communicated from the laboratory of the Johns Hopkins University by Mr. Gill.[3] The rocks described are phonolites, from conical hills similar to those in the Hegau in Baden, nepheline-basanites and basalts, nephelinite, and finally basalt glass. An extended petrographical study of these in all their different varieties will be published later.—Although the rocks of the Bohemian Mittelgebirge have been made the subjects of study by several petrographers, Hibsch[4] finds something new to say of them in a late article in *Tschermak's Mittheilungen.* The trachytes of the region are younger than the phonolites or the basalts and occur in but a few localities. Their porphyritic sanidines possess a rounded outline and are fringed with a rim of newly formed secondary feldspathic substance. Many of the phonolites contain a large amount of plagioclase, and have besides a trachytic habit. In their cavities is often noticed quite an interesting development of secondary albite. Little crystals of this mineral extend out from the sides of the cavity and penetrate into a mass of analcite, which, together with chabasite, has resulted from the alteration of the plagioclase. —In Blum's "Pseudomorphosen"[1] mention is made of a granite at Vordorf in the Fichtelgebirge, in which the flesh-red orthoclase is partially altered into epidote. Sandberger,[2] who has found blocks of the same rock, states that the epidote is more likely an alteration product of hornblende or augite, as it is associated with asbestus, while the red orthoclase is still fresh.—A grammatite rock occurs,[3] interstratified with phyllite, in the Bohemian Fichtelgebirge, between Klein-Wenden and Sichersreuth.—The third paper on the rocks of the Cortlandt Series, in the Hudson river, embraces[4] the treatment of the gabbros and diorites associated with the peridotites and norites which have been described in another place.[5] The gabbros present no peculiar features other than the granulation of some of their constituents. Two types of diorite are distinguished. One, containing brown hornblende, tends to pass into gabbro, norite, or hornblendite. The other, containing green hornlende, is closely related to mica-bearing rocks. The mica-diorites (Dana's soda-granites) are essentially coarse-grained aggregates of plagioclase and biotite, with often a little orthoclase and quartz, and sometimes garnet as a metamorphic mineral. The plagioclase has a specific gravity between 2.67 and 2.65, and is sometimes twinned, while at other times it is entirely free from twinning lamellæ. The most noticeable feature in the rock is the occurrence in it of a pale green non-pleochroic epidote, which appears to be original. The mineral is generally without terminations. It is strongly corroded on its edges as if eaten into by a liquid magma. The paper closes with a graphic representation of the close relations, which the author, Dr. Williams, has found to exist between the various eruptive members of this series.

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[1] Edited by Dr. W. S. Bayley, Colby University, Waterville, Me.

[2] Mitth. d. Comm. f. d. Geol. Landesunters, von Elo.-Lothr., 1887, i., p. 49.

[3] Johns Hopkins Univ. Circulars, No. 65, April, 1888, p. 71.

[4] Min. u. Petrog. Mitth., 1887, p. 232.

Mineralogical News.—In Douglas Co., Oregon, is a bed of *nickel silicate*, resembling garnierite, whose origin has been determined with some degree of certainty by Prof. Clarke.[6] A pure specimen of the mineral was found to have the composition:—

TiO	MgO	SiO_2	$Al_2O_3+Fe_2O_3$	Loss on ign.	Loss at 110°
27.57	10.56	44.73	1.18	6.99	8.87

The country rock associated with this mineral is a peridotite whose olivine contains .26 per cent. of nickel oxide. This rock was examined by Mr. Dieles, and was found to be penetrated by cracks filled with serpentine and quartz. The nickel mineral, wherever it occurs,is always associated with these alteration products. It occurs in the serpentine, which is directly connected with the grains of olivine from which it has been derived. There is every reason to believe that the nickel silicate came from the same source. A study of the Webster Co., N. C., and the New Caledonia nickel deposits indicate the same origin for the ores at these places.—A feldspar from Kilima-njaro, similar to that from the rhombic porphyry of Christiania, has been analyzed by Fletcher.[1] Its composition is:—

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[1] iii., p. 120.
[2] Neues. Jahrb. f. Min., etc., 1888, i., p. 208.
[3] Sandberger: Neues Jahrb. f. Min., etc., 1888, ii., p. 202.
[4] Amer. Jour. Sci., June, 1888, xxxv., p. 438.
[5] Amer. Naturalist, June, 1887, p. 568.
[6] Amer. Jour. Sci., xxxv., 1888, p. 483.

SiO_2	Al_2O_3	CaO	Na_2O	K_2O
62.17	23.52	2.90	6.80	4.61,

corresponding to a mixture of the anorthite, microcline and albite molecules in the proportions $An, Or_{.94}, Al_{2 \cdot 11}$. The extinction on the clinopinacoid is about 4° 20′. On the basal plane it is parallel to the clinopinacoid cleavage. In sections cut parallel to the orthopinacoid the microcline structure is visible.—Sandberger[2] calls attention to the properties of the carbonaceous material in the crystalline limestone of Wunsiedel in the Fichtelgebirge, as those of an amorphous substance corresponding to the graphitoid of Inostranzeff[3] and Sauer.[4] The hardness of the mineral is 3 and the specific gravity 2.207. It yields when burned 1.78 per cent. of ash.—A new analysis of *spodumene* from Brazil leads Jannasch[5] to the results reached by other analysts, and affirms the correctness of the formula $(Li. Na)_2 Al_2 (SiO_3)_4$.—Brief notes on the six iron sulphates, *coquimbite*, *copiapite*, *quenstedtite*, *bückingite*, *stypticite* and *halotrichite*, from Chili, are communicated by Linck[6] in a letter to the *Neues Jahrbuch*.

MORPHOLOGICAL AND PHYSICAL MINERALOGY.—Since almost all of our knowledge of the morphological properties of *markasite* depend principally upon the measurements of Hausmann and Sadebeck, and since these mineralogists disagree in their results, Gehmacher[7] has thought it worth while to measure the crystals in his possession, and from these measurements to recalculate the planes occurring in them. He finds the axial ratio to be: .7623 : 1 : 1.2167. The formulas of the different planes are determined, and other observations are made which indicate a monoclinic symmetry for the mineral.—Zepharovich's[8] measurements of *trona* crystals from Lake Lagunillas, Venezuela, show their axial relation to be:

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[1] Min. Magazine, July, 1887, and Zeits. f. Kryst. xiii., '87, p. 384.
[2] Neues Jahrb. f. Min., etc., 1888, i., p. 200.
[3] Neues Jahrb. f. Miner., etc., 1880, i., p. 97.
[4] Zeits. d. d. Geol. Zeits., xxxvii., p. 441.
[5] Neues Jahrb. f. Min., etc., 1888, i., p. 196.
[6] Neues Jahrb., f. Min., etc., 1888, i., p. 213.
[7] Zeits. f. Kryst., xiii., 1887, p. 242.
[8] Ib., xiii., 1887, p. 135.

2.8459 : 1 : 2.9696. $\beta = 77° 23'$. Their composition corresponds to that of the same mineral from other localities.—Very pure *idrialite* ($C_{80}H_{36}O_2$), crystals from Idria in Krain, consist of small plates bounded on two sides by parallel planes. The extinction against one of these sides is 5° 33′, and the optical angle of the mineral, measured in oil, is $2H = 101° 20'$. The interference figure is that of a biaxial crystal, with the bisectrix perpendicular to the surfaces of the plate.—A great many observations have been made by Niedmann[1] upon *barite* in order to determine the relations between the elasticity and the other physical properties of the mineral. He finds the direction of greatest elasticity to be perpendicular to the plane of easiest cleavage. The shape of the curve representing the relative values of the coefficients of elasticity for any given plane, corresponds in all cases to the symmetry of the orthorhombic system.

MISCELLANEOUS.—In a late paper Dr. Cohen[2] discusses critically the arguments in favor of the chemical theory of deposition for gold in placers, and also those in favor of its mechanical origin. He gives the main facts bearing on the subject, and shows that some of those which have always been cited as favoring the chemical theory, are of doubtful existence. It has been stated, for instance, that placer gold always contains less silver than vein gold from the same region. Analyses of specimens from Buttons Creek, in the South African gold-fields, however, prove that this is not always the case. Dr. Cohen's results are:—

	Au	Ag	Cu	Insol.
Vein gold	94.48	5.16	.25	.02
Placer gold	91.38	6.49	.09	.78
	95.02	4.60	.11	.07

He thinks that whereas placer gold, for the most part, is derived by the breaking down of gold veins, there is occasionally in addition a deposition of the metal from its solutions. This, however, he regards as playing but a subordinate rôle in the formation of placer gold.—A meteoric stone,[3] found in the San Emigdio mountains in California, is composed of chondri of olivine and anstatite, imbedded in a base composed of the same minerals in a fragmental condition. Nickeliferous iron constitutes 6·21 per cent. of the stone. It occurs in lumps and masses, often surrounding the chondri. An analysis of the metallic portion yielded 11.27 per cent. of nickel.

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[1] Ib., xiii., 1887, p. 362.
[2] Mitth. d. naturw. Ver. f. Neuvorpom. u. Rügen, 19 Jahrg., 1887.
[3] Merrill: Am. Jour. Sci., June, 1888, p. 490.